REMARKS

In the non-final Office Action, the Examiner rejects claims 37-45, 49, 51-57, 63-74 and 77-89 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 20030212666 to Basu et al. (hereinafter "BASU") in view of U.S. Patent No. 6,243,713 to Nelson et al. (hereinafter "NELSON"). Applicants respectfully traverse this rejection.

By this Amendment, Applicants amend claims 37, 39, 80, and 85 to improve form. No new matter has been added by the amendment. Claims 37-45, 49, 51-57, 63-74 and 77-89 are pending.

Rejection under 35 U.S.C. § 103(a) based on BASU and NELSON

Claims 37-45, 49, 51-57, 63-74 and 77-89 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over BASU in view of NELSON. Applicants respectfully traverse this rejection.

Amended independent claim 37 is directed to a method performed by a computer system. The method includes receiving, by a network interface or an input device of the computer system, a search query comprising a plurality of search terms from a user, where the search query further includes a plurality of user-selected operators associated with one of the search terms of the search query and where the plurality of operators comprise a same operator repeated multiple times; broadening, by a processor of the computer system, the one of the search terms based on the plurality of user-selected operators to produce a broadened search query, where broadening the one of the search terms comprises broadening the one of the search terms to an extent determined by a

number of times the same operator is repeated; and executing, by the processor, a search

using the broadened search query. BASU and NELSON, whether taken alone or in any

reasonable combination, do not disclose or suggest this combination of features.

For example, BASU and NELSON do not disclose or suggest receiving, by a

network interface or an input device of the computer system, a search query comprising a

plurality of search terms from a user, where the search query further includes a plurality

of user-selected operators associated with one of the search terms of the search query and

where the plurality of operators comprise a same operator repeated multiple times, as

recited in claim 37. The Examiner relies on paragraph [0033] and [0043] of BASU for

allegedly disclosing this feature (Office Action, p. 3). Applicants disagree with the

Examiner's interpretation of BASU.

Paragraph [0033] of BASU discloses:

> A query may be subjective or objective. For example, the query "sunset" refers to the setting of the sun and, hence, is an abstract objective query. On the other hand, the query "beautiful evening" is termed as an abstract subjective query in so far as it is based on the user's subjective interpretations of what constitutes a beautiful evening. It is contemplated that the present invention can search both objective and subjective queries. Although subjective queries are by nature particular to the user, the query system 108 is able to learn the user's preferences though user feedback, thereby adapting the search results to the user's definition of subjective concepts.

This section of BASU discloses that a query may be subjective or objective. For

example, the query "sunset" is an abstract objective query and the query "beautiful

evening" is an abstract subjective query. This section of BASU discloses searching both

subjective and objective queries, learning a user's preferences through user feedback, and

adapting search results to the user's definition of subjective concepts. This section of

BASU does not disclose or suggest an operator associated with a search term of a search

query, let alone a same operator repeated multiple times. Therefore, this section of

BASU does not disclose or suggest receiving, by a network interface or an input device

of the computer system, a search query comprising a plurality of search terms from a user, where the search query further includes a plurality of user-selected operators associated with one of the search terms of the search query and <u>where the plurality of operators comprise a same operator repeated multiple times</u>, as recited in claim 37.

Paragraph [0043] of BASU discloses:

> The query expansion operation 304 may be defined by the user or developed by the system through user interaction. It is contemplated that query to sub-query expansion may be one-to-one, one-to-many, many-to-one, or many-to-many. Referring now to FIG. 4, an example of a many-to-many query expansion process is shown. The query "outdoor" 402 is shown expanded to sub-queries "trees" 404 and "sky" 406, and the query "beach" 408 is mapped to sub-queries "sky" 406 and "sand" 410. Thus, queries may be expanded to a common sub-query while also being expanded to distinct sub-queries.

This section of BASU discloses that a query expansion operation may be defined by the user or developed by the system through user interaction. The query to sub-query expansion may be one-to-one, one-to-many, many-to-one, or many-to-many. An example of a many-to-many query is shown in Fig. 4 of BASU, which depicts the query "outdoor" mapped to the sub-queries "trees" and "sky" and the query "beach" mapped to sub-queries "sky" and "sand." This section of BASU does not disclose or suggest an operator associated with a search term of a search query, let alone a same operator repeated multiple times. Therefore, this section of BASU does not disclose or suggest receiving, by a network interface or an input device of the computer system, a search query comprising a plurality of search terms from a user, where the search query further includes a plurality of user-selected operators associated with one of the search terms of the search query and <u>where the plurality of operators comprise a same operator repeated multiple times</u>, as recited in claim 37.

NELSON does not overcome the deficiencies of BASU set forth above with respect to this feature of claim 37.

Furthermore, BASU and NELSON do not disclose or suggest broadening, by a

processor of a computer system, one of search terms based on a plurality of user-selected

operators to produce a broadened search query, <u>where broadening the one of the search</u>

<u>terms comprises broadening the one of the search terms to an extent determined by a</u>

<u>number of times the same operator is repeated,</u> as recited in claim 37. The Examiner

admits that BASU does not disclose this feature and relies on col. 7, lines 15-25 of

NELSON for allegedly disclosing this feature (Office Action, p. 3). Applicants disagree

with the Examiner's interpretation of NELSON.

Col. 7, lines 15-25 of NELSON disclose:

> As an optional process to increase the robustness of the multimedia retrieval pipeline, type-specific query tokens may be added 180 to any or all of the components that are in the query. Query expansion 180 selects "alternate" tokens to add to the query based on the original query tokens. For example, additional tokens may be used to represent other words similarly spelled to query keywords or that have similar meanings, or other images (or image attributes) of similar shape or color, texture, and so forth. This expansion can either be done by default, or at the discretion of the user via query operators. In addition, query expansion can add tokens of one component type in response to the presence of tokens of another type.

This section of NELSON discloses that an optional process to increase the robustness of a

multimedia retrieval pipeline is to add type-specific query tokens to any or all

components that are in a query. For example, additional tokens may be used to represent

other words similarly spelled to query keywords, or that have similar meanings, or other

images of similar shape, color, or texture. This query expansion can be done by default

or at the discretion of the user via query operators. In addition, query expansion can add

tokens of one component type in response to the presence of tokens of another type. This

section of NELSON does not disclose or suggest that one of the tokens is repeated, let

alone that a broadening of one of the search terms is to an extent determined by a number

of times a token is repeated, as would be required by claim 37 based on the Examiner's

interpretation of NELSON. Therefore, this section of NELSON does not disclose or

suggest broadening, by a processor of a computer system, one of search terms based on a

plurality of user-selected operators to produce a broadened search query, <u>where</u>

<u>broadening the one of the search terms comprises broadening the one of the search terms</u>

<u>to an extent determined by a number of times the same operator is repeated</u>, as recited in

claim 37.

For at least the foregoing reasons, claim 37 is patentable over BASU and

NELSON, whether taken alone or in any reasonable combination. Accordingly,

Applicants respectfully request that the rejection of claim 37 under 35 U.S.C. § 103(a)

based on BASU and NELSON be reconsidered and withdrawn.

Claims 38 and 40-45 depend from claim 37. Therefore, these claims are

patentable over BASU and NELSON, whether taken alone or in any reasonable

combination, for at least the reasons set forth above with respect to claim 37.

Accordingly, Applicants respectfully request that the rejection of claims 38 and 40-45

under 35 U.S.C. § 103(a) based on BASU and NELSON be reconsidered and withdrawn.

Amended independent claim 39 is directed to a method performed by a computer

system. The method includes receiving, by a network interface or an input device of the

computer system, a search query comprising a plurality of search terms; broadening, by a

processor of the computer system, one of the plurality of search terms; excluding, by the

processor, the broadened one of the plurality of search terms from the search query;

executing, by the processor, a search based on the search query, after excluding the

broadened one of the plurality of search terms, to provide search results; and evaluating,

by the processor, the search results relative to the excluded search term using categorical

or clustered distinctions. BASU and NELSON, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, BASU and NELSON do not disclose or suggest excluding, by a processor, a broadened one of the plurality of search terms from a search query, as recited in claim 39. The Examiner relies on paragraphs [0043] and [0004] of BASU for allegedly disclosing this feature (Office Action, p. 4). Applicants disagree with the Examiner's interpretation of BASU.

Paragraph [0043] of BASU was reproduced above. This section of BASU discloses that a query expansion operation may be defined by the user or developed by the system through user interaction. The query to sub-query expansion may be one-to-one, one-to-many, many-to-one, or many-to-many. An example of a many-to-many query is shown in Fig. 4 of BASU, which depicts the query "outdoor" mapped to the sub-queries "trees" and "sky" and the query "beach" mapped to sub-queries "sky" and "sand."

This section of BASU does not disclose or suggest excluding one of the broadened search terms from the search query. Rather, this section of BASU discloses mapping a search term to an additional search term, mapping a search term to multiple additional search terms, mapping multiple search terms to one additional search term, and mapping multiple search terms to multiple search terms. This section of BASU does not disclose or suggest, for example, mapping a search term to an additional search term, and then excluding that search term and the additional search term from the search query, as would be required by claim 39 based on the Examiner's interpretation of BASU.

Therefore, this section of BASU does not disclose or suggest excluding, by a processor, a

broadened one of the plurality of search terms from a search query, as recited in claim 39.

Paragraph [0004] of BASU discloses:

> Another search strategy is the use of document classification. In this approach, documents are first classified using a document classification algorithm. Infrequent terms found in the document class are considered similar and are clustered in the same term class, referred to as a thesaurus class. The indexing of documents and queries is enhanced either by replacing a term by a thesaurus class or by adding a thesaurus class to the index data. However, the retrieval effectiveness depends strongly on some parameters that are often difficult to determine. See, for example, C. J. Crouch, B. Young, Experiments in Automatic Statistical Thesaurus Construction, SIGIR'92, 15th Int. ACM/SIGIR Conf. on R & D in Information Retrieval, Copenhagen, Denmark, pp. 77-87, June 1992. Furthermore, commercial databases typically contain millions of documents and are highly dynamic. Often the number of documents is much larger than the number of terms in the database. Consequently, document classification is much more expensive and has to be done more frequently than the simple term classification mentioned above.

This section of BASU discloses that another search strategy is the use of document

classification, in which documents are classified using a classification algorithm.

Infrequent terms found in a document class are considered similar and are clustered in the

same term class, called a thesaurus class. This section of BASU discloses that queries are

enhanced by either replacing a term by a thesaurus class or by adding a thesaurus class to

the index data. Commercial databases contain millions of documents and the number of

documents is much larger than the number of terms in the database. This section of

BASU does not disclose or suggest broadening a search term, let alone excluding a

broadened search term from a search query. Therefore, this section of BASU does not

disclose or suggest excluding, by a processor, a broadened one of the plurality of search

terms from a search query, as recited in claim 39.

NELSON does not overcome the deficiencies of BASU set forth above with

respect to claim 39.

For at least the foregoing reasons, claim 39 is patentable over BASU and

NELSON, whether taken alone or in any reasonable combination. Accordingly,

Applicants respectfully request that the rejection of claim 39 under 35 U.S.C. § 103(a)

based on BASU and NELSON be reconsidered and withdrawn.

Claims 77-79 depend from claim 39. Therefore, these claims are patentable over

BASU and NELSON, whether taken alone or in any reasonable combination, for at least

the reasons set forth above with respect to claim 39. Accordingly, Applicants

respectfully request that the rejection of claims 77-79 under 35 U.S.C. § 103(a) based on

BASU and NELSON be reconsidered and withdrawn.

Independent claims 49 and 65 recite features similar to, yet possibly of different

scope than, features discussed above with respect to claim 37. Therefore, these claims

are patentable over BASU and NELSON, whether taken alone or in any reasonable

combination, for at least the reasons set forth above with respect to claim 37.

Accordingly, Applicants respectfully request that the rejection of claims 49 and 65 under

35 U.S.C. § 103(a) based on BASU and NELSON be reconsidered and withdrawn.

Claims 51-57 and 63-64 depend from claim 49. Therefore, these claims are

patentable over BASU and NELSON, whether taken alone or in any reasonable

combination, for at least the reasons set forth above with respect to claim 49.

Accordingly, Applicants respectfully request that the rejection of claims 51-57 and 63-64

under 35 U.S.C. § 103(a) based on BASU and NELSON be reconsidered and withdrawn.

Claims 66-74 depend from claim 65. Therefore, these claims are patentable over

BASU and NELSON, whether taken alone or in any reasonable combination, for at least

the reasons set forth above with respect to claim 65. Accordingly, Applicants

respectfully request that the rejection of claims 66-74 under 35 U.S.C. § 103(a) based on

BASU and NELSON be reconsidered and withdrawn.

Amended independent claim 80 is directed to a method performed by a computer system. The method includes receiving, by a network interface or an input device of the computer system, a search query comprising a search term; obtaining, by a processor of the computer system, a set of broadened search terms based on the search term; presenting, by the network interface or by an output device of the computer system, the set of broadened search terms as a set of corresponding hyperlinks in a user interface; receiving by the network interface or the input device, selection of a subset of hyperlinks of the set of hyperlinks to select a subset of the broadened search terms; broadening, by the processor, the search query using the selected subset of broadened search terms; and executing, by the processor, a search using the broadened search query. BASU and NELSON, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, BASU and NELSON do not disclose or suggest presenting, by a network interface or by an output device of a computer system, a set of broadened search terms as a set of corresponding hyperlinks in a user interface, as recited in claim 80. The Examiner did not address claim 80. Instead, the Examiner alleges that claims 80-84 are method claims corresponding to the methods of claims 1 and 77-79 and are rejected for the same reasons (Office Action, p. 11). However, claim 1 does not recite, for example, presenting a set of broadened search terms as a set of corresponding hyperlinks in a user interface, and the Examiner did not address claims 77-79 (see Office Action, pp. 10-11). Therefore, a *prima facie* case of obviousness with respect to claim 80 has not been established.

Nevertheless, Applicants submit that BASU and NELSON, whether taken alone or in any reasonable combination, do not disclose or suggest the above-noted feature of claim 80. For example, in rejecting claim 45, the Examiner relies on paragraph [0038] of BASU for allegedly disclosing "presenting at least one broadened search characteristic associated with the one of the search terms as a hyperlink; and forming the broadened search query responsive to a selection of the hyperlink by the user" (Office Action, p. 6). Applicants submit that this section (or any other section) of BASU does not disclose or suggest the above-noted feature of claim 80.

Paragraph [0038] of BASU discloses:

> As mentioned above, the query system 108 of the present invention is adaptive. Specifically, the system 108 includes an adaptation module 212 that attempts to refine the search results as queries are repeated over time. The adaptation module 212 is capable of modifying the query expansion module 204, the sub-query processing module 206, and the merging module 208 according to user and system feedback. For example, if a user indicates that the sub-query term "smoke" is not relevant in a "rocket launch" query, the adaptation module 212 may adaptively assign a lower probability of relevance to the "smoke" sub-query in future iterations of "rocket launch" queries. In other words, the adaptation module 212 modifies the query expansion module 204 so that the term "smoke" is assigned a lower confidence level in a "rocket launch" query. The parametric learning techniques of the adaptation module 212 may use a generative approach, including, but not limited to, probabilistic models and graphical probabilistic models and/or a discriminant approach, including, but not limited to, kernel machines, such as support vector machines and neural networks. The adaptation process of the system 108 is discussed in greater detail below.

This section of BASU discloses an adaptation module that attempts to refine the search results as queries that are repeated over time. The adaptation module is capable of modifying a query expansion module, a sub-query processing module, and a merging module according to user and system feedback. For example, if a user indicated that the sub-query term "smoke" is not relevant to a "rocket launch" query, the adaptation module may assign a lower probability of relevance to the "smoke" sub-query for future iterations of the "rocket launch" query. The parametric learning techniques of the adaptation module may use a generative approach, including probabilistic models and discriminant approaches, such as kernel machines, support vector machines, and neural

networks. This section of BASU does not disclose, suggest, or even mention anything that could reasonably be construed as hyperlinks, let alone presenting a set of broadened search terms as hyperlinks. Therefore, this section of BASU does not disclose or suggest presenting, by a network interface or by an output device of a computer system, a set of broadened search terms as a set of corresponding hyperlinks in a user interface, as recited in claim 80.

NELSON does not overcome the deficiencies of BASU set forth above with respect to claim 80.

For at least the foregoing reasons, claim 80 is patentable over BASU and NELSON, whether taken alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claim 80 under 35 U.S.C. § 103(a) based on BASU and NELSON be reconsidered and withdrawn.

Claims 81-84 depend from claim 80. Therefore, these claims are patentable over BASU and NELSON, whether taken alone or in any reasonable combination, for at least the reasons set forth above with respect to claim 80. Accordingly, Applicants respectfully request that the rejection of claims 81-84 under 35 U.S.C. § 103(a) based on BASU and NELSON be reconsidered and withdrawn.

Amended independent claim 85 is directed to a method performed by a computer system. The method includes receiving, by a network interface or by an input device of the computer system, a search query comprising a search term; obtaining, by a processor of the computer system, a set of broadened search terms based on the search term; presenting, by the network interface or an output device of the computer system, a set of checkboxes in conjunction with the set of broadened search terms, where each checkbox

of the set of checkboxes corresponds to one broadened search term of the set of

broadened search terms; receiving, by the network interface or the input device, a

selection of a subset of the set of checkboxes to select a subset of the broadened search

terms; broadening, by the processor, the search query using the selected subset of

broadened search terms; and executing, by the processor, a search using the broadened

search query. BASU and NELSON, whether taken alone or in any reasonable

combination, do not disclose or suggest this combination of features.

For example, BASU and NELSON do not disclose or suggest receiving, by a

network interface or by an output device of a computer system, a selection of a subset of

a set of checkboxes (presented in conjunction with a set of broadened search terms) to

select a subset of the broadened search terms, as recited in claim 85. The Examiner did

not address claim 85. Instead, the Examiner alleges that claims 85-89 are method claims

corresponding to the methods of claims 1 and 77-79 and are rejected for the same reasons

(Office Action, p. 11). However, claim 1 does not recite, for example, receiving selection

of a subset of a set of checkboxes (presented in conjunction with a set of broadened

search terms) to select a subset of the broadened search terms, and the Examiner did not

address claims 77-79 (see Office Action, pp. 10-11). Therefore, a *prima facie* case of

obviousness with respect to claim 85 has not been established.

Nevertheless, Applicants submit that BASU and NELSON, whether taken alone

or in any reasonable combination, do not disclose or suggest the above-noted feature of

claim 85. For example, in rejecting claim 51, the Examiner relies on paragraph [0038] of

BASU for allegedly disclosing "where the search query further includes a user-selected

delimiter associated with another one of the search terms that indicates that the other one

of the search terms should not be broadened" (Office Action, pp. 6-7). Applicants submit that this section (or any other section) of BASU does not disclose or suggest the above-noted feature of claim 85.

Paragraph [0038] of BASU was reproduced above. This section of BASU discloses an adaptation module that attempts to refine the search results as queries are repeated over time. The adaptation module is capable of modifying a query expansion module, a sub-query processing module, and a merging module according to user and system feedback. For example, if a user indicated that the sub-query term "smoke" is not relevant to a "rocket launch" query, the adaptation module may assign a lower probability of relevance to the "smoke" sub-query for future iterations of the "rocket launch" query. The parametric learning techniques of the adaptation module may use a generative approach, including probabilistic models and discriminant approaches, such as kernel machines, support vector machines, and neural networks. This section of BASU does not disclose, suggest, or even mention anything that could reasonably be construed as checkboxes presented in conjunction with a set of broadened search terms. Therefore, this section of BASU does not disclose or suggest receiving, by a network interface or by an output device of a computer system, a selection of a subset of a set of checkboxes (presented in conjunction with a set of broadened search terms) to select a subset of the broadened search terms, as recited in claim 85.

NELSON does not overcome the deficiencies of BASU set forth above with respect to claim 85.

For at least the foregoing reasons, claim 85 is patentable over BASU and NELSON, whether taken alone or in any reasonable combination. Accordingly,

Applicants respectfully request that the rejection of claim 85 under 35 U.S.C. § 103(a)

based on BASU and NELSON be reconsidered and withdrawn.

Claims 86-89 depend from claim 85. Therefore, these claims are patentable over

BASU and NELSON, whether taken alone or in any reasonable combination, for at least

the reasons set forth above with respect to claim 85. Accordingly, Applicants

respectfully request that the rejection of claims 86-89 under 35 U.S.C. § 103(a) based on

BASU and NELSON be reconsidered and withdrawn.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully

request the Examiner's reconsideration of the application and the timely allowance of the

pending claims.

While the present application is now believed to be in condition for allowance,

should the Examiner find some issue to remain unresolved, or should any new issues

arise which could be eliminated through discussions with Applicants' representative, then

the Examiner is invited to contact the undersigned by telephone in order to expedite

prosecution of this application.

As Applicants' remarks with respect to the Examiner's rejections are sufficient to

overcome these rejections, Applicants' silence as to assertions by the Examiner in the

Office Action or certain requirements that may be applicable to such assertions (e.g.,

whether a reference constitutes prior art, reasons to modify a reference and/or to combine

references, assertions as to dependent claims, etc.) is not a concession by Applicants that

such assertions are accurate or such requirements have been met, and Applicants reserve

the right to analyze and dispute such assertions/requirements in the future.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §

1.136 is hereby made. Please charge any shortage in fees due in connection with the

filing of this paper, including extension of time fees, to Deposit Account No. 50-1070

and please credit any excess fees to such deposit account.

Respectfully submitted,

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